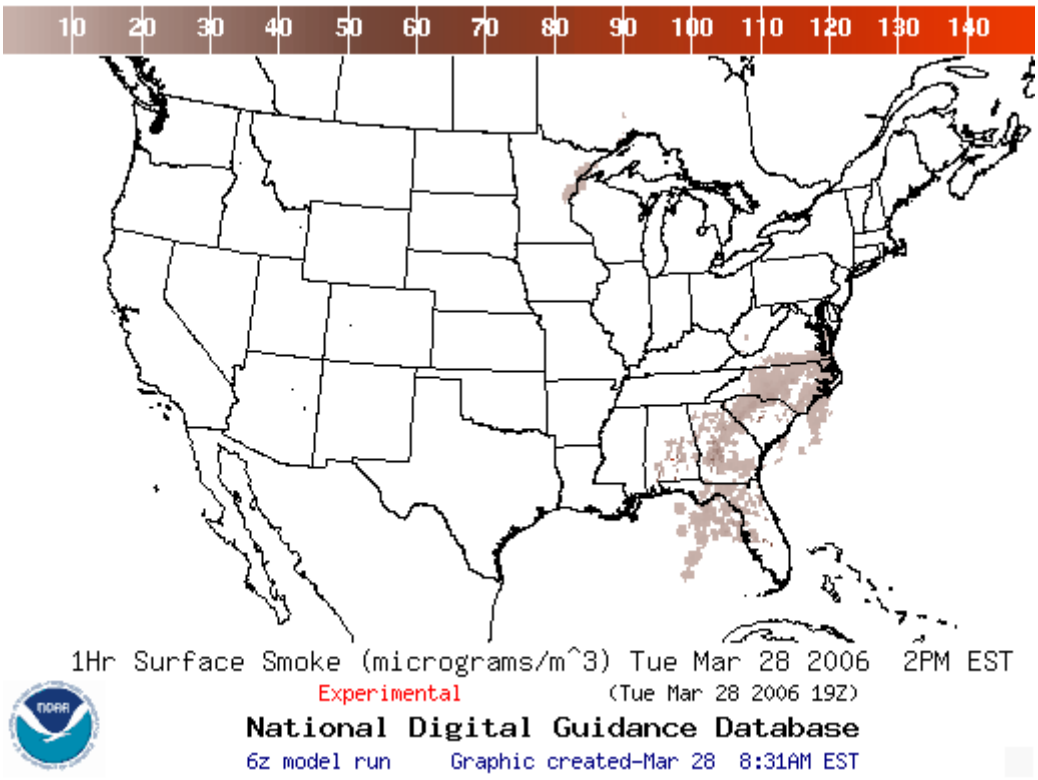
Experimental Smoke Forecast Guidance Now Available

Background: Smoke from large fires is an important component of fine particle pollution, which is responsible for an estimated 40,000 premature deaths each year (40,000 each year; Science, 2000 and 2002). Smoke forecast guidance will help air quality forecasters and the public take steps to limit their exposure to airborne particulate matter.

Summary: A team of scientists from NOAA's Office of Atmospheric Research, National Weather Service (NWS), and Satellite and Information Service has completed initial development on the smoke forecast tool required to begin experimental testing, including integrating satellite information on location of wildfires with weather (North American mesoscale model) and smoke transport (HYSPLIT) models to produce each day a prediction of smoke transport. Hour-by hour predictions, at 12 kilometer grid resolution of smoke at the surface and in the vertical air column, are provided each day by 13 UTC, extending through midnight next day. Predictions are generated on NOAA's National Center for Environmental Prediction supercomputers are updated each day, sent through the NWS Telecommunications Operations Center, and posted on the National Digital Guidance Database under http://www.weather.gov/aq-expr/sectors/conus.php. Some enhanced product functionality is still in work. Air quality forecasters in the NWS nationwide focus group are providing feedback, to date uniformly positive, on test products. Satellite imagery is being used for verification of predicted smoke transport. Forecast accuracy and reliability will be monitored during experimental testing over the upcoming warm months, aimed at attaining benchmark deployment readiness criteria needed for operational implementation.

Sample product: Here is a sample product of surface smoke generated at 06 UTC on March 28, and valid 13 hours later at 2PM (19 UTC) that same day.


10 20 30 40 50 60 70 80 90 100 110 120 130 140
1Hr Surface Smoke (micrograms/m^3) Tue Mar 28 2006 2PM EST
Experimental
(Tue Mar 28 2006 19Z)
National Digital Guidance Database
6z model run
Graphic created-Mar 28 8:31AM EST